TITLE OF THE INVENTION

DISCLOSING METHOD, DISCLOSING SYSTEM, CENTRAL APPARATUS, AND COMPUTER MEMORY PRODUCT

5 BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a disclosing method with which browsable information stored in a central apparatus can be disclosed in response to a request sent from a terminal apparatus

10 connected to the central apparatus through a communication network.

2. Description of Related Art

Organizations such as a university and an enterprise generally have their own homepages with which their information

15 can be freely browsed through the internet or their own intranet. On their homepages are uploaded many kinds of browsable information such as information of canceled classes and classroom changes which is disclosed on a university bulletin board and information of intra-enterprise notifications. To browse such a

20 homepage, a user first inputs his ID and password given to him beforehand and, when his login request is authorized, a top page of the homepage is displayed on a browser.

After the top page is displayed, the user can go along a link to obtain browsable information which he wants.

25 Recently, however, homepage contents have been enriched

and the amount of the browsable information branching from the top page has been increasing. This has brought about a problem that the user cannot easily access information he really wants. When the homepage contents are changed, the user clicks at a

5 hyperlink indicated by "What's New" on the top page to display only changed contents. This permits him to obtain updated browsable information. With this configuration, however, the user cannot always obtain information necessary for him, since he can access only the updated information.

10 Moreover, in such an organization as a university and an enterprise, when a user accesses browsable information, two routes are available for him: one for making access through a closed communication network such as an intranet and the other for making access through an open communication network such as the

15 internet. In a case of access through the intranet, a high security level is realized. However, in a case of access through the internet, realized is only a low security level, so that it is necessary to appropriately protect the browsable information corresponding to the level of security.

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BRIEF SUMMARY OF THE INVENTION

The present invention has been made with the aim of solving the above problems.

It is a first object of the present invention to provide a

25 disclosing method, a disclosing system, a central apparatus, and a

computer memory product which records computer programs to effectuate a computer as the central apparatus, for permitting a user to easily access browsable information necessary for him among enormous contents, by containing, at a part of a page,

5   information which is really necessary for him.

It is a second object of the present invention to provide a disclosing method, a disclosing system, a central apparatus, and a computer memory product which records computer program to effectuate a computer as the central apparatus, for avoiding

10   unauthorized access to browsable information by imposing a limit on the browsable information according to an access path which the user uses.

A disclosing method of the invention in which browsable information stored in a central apparatus is disclosed in response to

15   a request sent from a terminal apparatus connected to the central apparatus through a communication network, the disclosing method comprising steps of: an acceptance step for accepting headline information of the browsable information, authorized user information of a user authorized to browse the browsable

20   information, and storage location information of the browsable information; a registration step for registering the accepted headline information and the authorized user information in association with the storage location information; a reception step for receiving identification information for identifying a user, which

25   identification information is sent from the terminal apparatus to

the central apparatus; an extraction step for extracting the headline information and the storage location information based on the received identification information and the registered authorized user information; a generation step for generating a document

5   containing a hyperlink made up of the extracted headline information and the storage location information; and a transmission step for transmitting the generated document to the terminal apparatus.

In the invention, the central apparatus accepts headline

10   information of the browsable information, authorized user information of a user authorized to browse the browsable information, and storage location information of the browsable information.   For example, supposing that a member list for a seminar of a university is the browsable information, the browsable

15   information is a file of the member list for the seminar, the headline information is a "member list for XY seminar", the authorized user information is information of students belonging to the XY seminar, and the storage location information is, for example, a URL (Uniform Resource Locators) which is used to access the seminar

20   member list.   The central apparatus stores accepted headline information ("member list for XY seminar") and authorized user information (such as IDs of students belonging to the XY seminar) in association with the storage location information (URL).

When a user transmits the identification information (ID)

25   for identifying him to the central apparatus, the central apparatus

receives the ID and extracts the headline information and storage location information based on the received identification information and the registered authorized user information. For example, when the user is a member of a XY seminar, the "member

5   list for XY seminar" as the headline information and the URL as the storage location information are extracted. Based on the extracted headline information and storage location information, the central apparatus generates a hyperlink and a document containing the generated hyperlink such as an HTML (Hyper Text Markup

10   Language).

Then, the generated document is transmitted to a terminal apparatus of the user. By this step, a common browsable information is displayed on the top page of the browser of the user and, additionally, a hyperlink used for accessing information which

15   is really necessary for the user is also displayed, thus providing an efficient way to obtain information.

Moreover, in the invention, the central apparatus, when accepting the browsable information, further accepts limit information for limiting browsing of the browsable information

20   according to whether the request has been sent through a communication network such as an intranet or through an auxiliary communication network such as the internet. That is, there are two types of the browsable information: information which is open for outsiders such as information of canceled classes, and

25   information which preferably is kept secret from outsiders such as

seminar research reports.   In the invention, limitation for limiting browsing is accepted and stored according to an access path which the user uses, i.e., according to whether the user makes access through the intranet or the internet.

5   Specifically, as for a seminar research report which needs limitation on browsing, the limitation information is registered.   As for information of canceled classes which needs no limitation on browsing, no limitation information is registered.   When the request is sent through an auxiliary communication network such

10   as the internet, headline information and storage location information are extracted on the basis of the received identification information, the registered authorized user information, and the limitation information.   That is, the seminar research report, which has browsing limitation, is not extracted.   On the other hand,

15   when the request is sent through a communication network such as an intranet, the headline information and the storage location information are extracted without such limitation.

Moreover, in the invention, the information to be disclosed is controlled according to registered contents of the storage location

20   information based on the access path.   Two types of information is registered: first storage location information in which a storage location of the browsable information is set to be disclosed when the request is sent through an internal network and second storage location information in which a storage location of the browsable

25   information is set to be disclosed when the request is sent through

an external network.   To limit disclosing, no storage location

information is set.   For example, when the first storage location

information is not set, the system judges that the request sent

through the internal network has no authority for browsing and

5   does not give corresponding headline information.   Also, when the

second storage location information is not set, the system judges

that the request sent through the external network has no authority

for browsing and does not give corresponding headline information.

Thus, it is possible to control browsing authority according to the

10   set contents of the storage location information.

Since the information to be disclosed can be thus controlled

according to an access path, security of the information to be

browsed can be guaranteed.

The above and further objects and features of the invention

15   will more fully be apparent from the following detailed description

with accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

20   FIG. 1 is an explanatory view for showing an outline of a

disclosing system;

FIG. 2 is a block diagram for showing a hardware

configuration of a central apparatus;

FIG. 3 is an explanatory view for showing a record layout of

25   a user DB;

FIG. 4 is an explanatory view for showing a record layout of a group DB;

FIG. 5 is an explanatory view for showing an image displayed when registering browsable information;

5   FIG. 6 is an explanatory view for showing a record layout of a browsable information DB;

FIG. 7 is an explanatory view for showing an image displayed on the browser when access is made from a terminal apparatus through a communication network;

10   FIG. 8 is a flowchart for showing a processing procedure made when a request is sent from a terminal apparatus;

FIG. 9 is a flowchart for showing a processing procedure made when a request is sent from a terminal apparatus;

FIG. 10 is a block diagram for showing a configuration of

15   the central apparatus according to Embodiment 2; and

FIG. 11 is an explanatory view for showing an image according to another embodiment, displayed when registering browsable information.

20   DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiment 1.

FIG. 1 is an explanatory view for showing an outline of a disclosing system.   A reference numeral 1 indicates a central

25   apparatus in which browsable information and headline

information are stored.   To the central apparatus 1 are connected terminal apparatuses 2 such as personal computers, through a communication network N such as an intranet which is formed in a predetermined space.   Each of the terminal apparatuses 2 can

5 obtain necessary browsable information.   Also, to the central apparatus 1 are connected terminal apparatuses 21 outside the intranet through an auxiliary communication network SN such as the internet, each of which can also obtain the browsable information.

10 When a terminal apparatus 21 obtains browsable information from the central apparatus 1 through the auxiliary communication network SN, direct access to the central apparatus 1 is not authorized by an F/W computer 4, which functions as a firewall, and only access to a computer 3 provided with WWW

15 (World Wide Web) server functions is authorized.   The computer 3 sends a request for necessary information to the central apparatus 1 in response to the request sent from the terminal apparatus 21, and transmits obtained browsable information to the terminal apparatus 21.

20 FIG. 2 is a block diagram for showing a hardware configuration of the central apparatus 1.   As shown in the figure, to the CPU (Central Processing Unit) 11 are connected through a bus 17 a RAM (Random Access Memory) 12, an input unit 13 such as a keyboard and a mouse, a display unit 14 such as an LCD, a storage

25 unit 15 such as a hard disk, and a communication unit 16 such as a

LAN connection board.   The RAM 12 stores a control program 12P

containing an application prepared in language such as Java or C,

for executing a disclosing method of the invention described later.

The storage unit 15 stores therein a user database

5   (hereinafter abbreviated as a user DB) 151 in which user

information is stored, browsable information database (hereinafter

abbreviated as a browsable information DB) 152 in which browsable

information, headline information thereof and the like are stored,

and a group database (hereinafter abbreviated as a group DB) 153

10   in which information of groups to which a user belongs is stored.

Contents of these DBs are described later.   Although the following

will describe a case where intramural browsable information of a

university stored in the central apparatus 1 is browsed with the

terminal apparatus 2 used by a student, a professor, a staff and the

15   like, the invention is also applicable to a case where browsable

information inside an enterprise or a hospital is browsed.

FIG. 3 is an explanatory view for showing a record layout of

a user DB 151.   As shown in the figure, for each student,

information of his password, his student number, his name, his

20   department, his subject, his study room and the like which is

registered to be used for authentication when browsing the

browsable information in association with his inherent

identification information (hereinafter abbreviated as ID).   These

information items may be inputted by an administrator through the

25   input unit 13 as occasion demands.

FIG. 4 is an explanatory view for showing a record layout of the group DB 153. The group DB 153 stores therein a department DB 1531 in which IDs of students belonging to each department are stored, a subject DB 1532 in which IDs of students belonging to

5 each subject are stored, and a study room DB 1533 in which IDs of students belonging to each study room are stored. The subject DB 1531 sorts therein the user DB 151 using the information of each department as a key and, likewise, the subject DB 1532 and the study room DB 1533 also sort therein the user DB 151 for each

10 item.

FIG. 5 is an explanatory view for showing an image displayed when registering browsable information. Browsable information presented by a professor, an office and the like is stored when the administrator uploads the information from the terminal

15 apparatus 2 to the central apparatus 1. Although the following will describe such an aspect that the administrator uploads the browsable information from the terminal apparatus 2 to the central apparatus 1 in this embodiment, the professor etc. may upload the information from his own terminal apparatus 2 to the central

20 apparatus 1, and furthermore, the administrator may input the browsable information through the input unit 13 of the central apparatus 1.

When the administrator has logged in using his inherent ID, a document such as an HTML shown in FIG. 5 is displayed on

25 the browser. The entered items may include headline information

of the browsable information, storage location information and the like.   The headline information of the browsable information is a title of a hyperlink, while the storage location information indicates a jump destination reached when a hyperlink indicated by the

5   headline information is clicked.   For example, when a hyperlink indicated by headline information "Members List for Study Room in 2001" is clicked, an HTML is read from a saving source in which the information is inputted in a field of the storage location information and then transferred to the terminal apparatus 2.

10   As for the storage location information according to the invention, two URLs are registered for the same browsable information in order to limit the browsable information according to whether the request is sent through the communication network N or through the auxiliary communication network SN different from

15   the communication network N.   Specifically, intramural URL and extramural URL are inputted.   As for the extramural URL, attribute information, which indicates whether browsing is limited or not, can be set according to will of the administrator or a registration requester.

20   For example, to authorize external browsing of information of a canceled class, "authorized" is registered as the limitation information.   In this case, when a student registered to the class has accessed through the intramural terminal apparatus 2 to the central apparatus 1, the intramural URL and the headline

25   information are extracted, so that a hyperlink made up of the

extracted intramural URL and the headline information is integrated into a document such as an HTML (hereinafter described as an HTML) on the top page to thereby generate an HTML containing the hyperlink.   The generated HTML is transmitted to

5   the terminal apparatus 2.   On the other hand, when access to the computer 3 is made from the terminal apparatus 21 through the auxiliary communication network SN such as the internet, a flag is set which indicates that the access is made through the auxiliary communication network SN and the information having thus set

10   flag is transmitted to the central apparatus 1.   The central apparatus 1 refers the flag to extract the extramural URL and the headline information and generates an HTML containing a hyperlink made up of the extramural URL and the headline information.

15   When "authorized" has been set as the limitation information in this case, the generated HTML is transmitted to the terminal apparatus 21.   However, there may be such a case where information such as individual records and research data should not be made official.   In such a case, "limited" is registered as the

20   limitation information so that the registered headline information and extramural URL cannot be extracted to disable external access to the information.

Besides this information, authorized user information for authorizing to browse the browsable information is inputted.   The

25   authorized user information can be registered by inputting ID for

each user, each study room or each subject as shown in the figure. To input the ID as a group, name of the subject , the study room or the like to be official is inputted as shown in the figure.   Such information is inputted for each browsable information item.

5   Thus inputted browsable information and the accompanying information are transmitted to the central apparatus 1 and stored in the browsable information DB 152.   FIG. 6 is an explanatory view for showing a record layout of a browsable information DB 152.   The headline information, the intramural

10   and extramural URLs, the authorized user information, and the limitation information are stored in association with the storage location information.

         To realize the method for limiting the browsable information according to whether the request is sent through the

15   communication network N or through the auxiliary communication network SN, the limitation information can be set as mentioned above and, besides, limitation of information also can be controlled according to set contents of the intramural and extramural URLs without providing an item of the limitation information.   In this

20   case, when neither of the intramural and extramural URLs is set, no hyperlink including the headline information is generated.   In the case of the request through the communication network N, a hyperlink is generated by extracting the headline information, for which the intramural URL is set, from the browsable information

25   authorized to the authorized user.   In the case of the request

through the auxiliary communication network SN, a hyperlink is generated by extracting the headline information, for which the extramural URL is set, from the browsable information authorized to the authorized user.   Combinations of the set states of the

5   intramural and extramural URLs and the limitation according to the access path is not limited to the above and can be controlled by the agreement made beforehand.

FIG. 7 is an explanatory view for showing an image displayed on the browser when access is made from a terminal

10   apparatus through a communication network N.   When access to the central apparatus 1 is made from the terminal apparatus 2 through the communication network N, information common to each student is displayed in regions indicated by frames F2 and F3. In frame F1, on the other hand, such a hyperlink is displayed that

15   enables accessing the browsable information necessary for each student.   This hyperlink is clicked to browse the browsable information.   The browsable information displayed at frame F1 may differ for each student.

When the user ID is 1001, "Members List for Study Room

20   in 2001" and "XY Treatise" are extracted from the browsable information DB shown in FIG. 6 to display a hyperlink indicated by L1 and L2 as shown in FIG. 7. On the other hand, when access to the computer 3 is made from the terminal apparatus 2 through the auxiliary communication network SN, the flag is set to transmit the

25   information to the central apparatus 1.   The central apparatus 1

refers the limitation information and, when "limited" is registered as the limitation information, extracts nothing. As a result, the headline information and the storage location information are extracted as for "Members List for Study Room in 2001", but, as for

5   "XY Treatise", none of them is extracted, so that the hyperlink L2 shown in FIG. 7 is not displayed. When the hyperlink is clicked in this state, the system links to a URL stored in the storage location information. This permits the students etc. to easily obtain information necessary for him. FIG. 11 is an explanatory view for

10   showing an image according to another embodiment, displayed when registering browsable information. As shown in the figure, display order of the browsable information items may be registered plainly by assigning numbers for items of the registered headline information.

15   The following will describe the contents of processing in the above-mentioned configuration according to the invention, with reference to flowcharts. FIGS. 8 and 9 are flowcharts for showing a procedure for processing executed when the request is sent from the terminal apparatus 2. First, the process accepts the headline

20   information, authorized user information, storage location information, and limitation information uploaded by the administrator (step S81) and stores these accepted information items in the browsable information DB 152 beforehand (step S82). Necessary information is already stored in the user information DB

25   151 and the group DB 153.

To make access from the terminal apparatus 2 through the communication network N, an ID and a password are transmitted to the central apparatus 1 (step S83).   On the other hand, to make access from the terminal apparatus 2 through the auxiliary

5   communication network SN, the ID and the password are first transmitted to the computer 3, which in turn sets a flag to transmit the flag setting information as well as the ID and password to the central apparatus 1 (step S83).

The central apparatus 1 receives the ID and the password

10   (step S84) and refers the user DB 151 to authenticate the access, and then the central apparatus 1 judges whether the flag is set or not (step S85).   When the flag is set (YES at step S85), i.e., it is judged that the request is sent from the terminal apparatus 21 through the extramural auxiliary communication network, the

15   process refers the limitation information to extract an extramural URL, which is the headline information and storage location information, from the browsable information DB 152 using the ID as a key (step S86) and then stores thus extracted headline information and the storage location information in the RAM 12.

20   On the other hand, when the flag is not set (NO at step S85), i.e., it is judged that the request is sent from the terminal apparatus 2 through the intramural communication network N, the process extracts an intramural URL, which is the headline information and storage location information, from the browsable

25   information DB 152 using the ID as a key without referring the

limitation information (step S87) and then stores thus extracted headline information and the storage location information in the RAM 12. The central apparatus 1 reads an HTML on the top page stored in the storage unit 15 beforehand (step S91), reads the

5 headline information and storage location information stored in the RAM 12, and then generates an HTML for each user, the HTML including a hyperlink made up of thus read headline information and storage location information (step S92). Specifically, the process writes the extracted storage location information and the

10 headline information into tags indicated by <A HREF> through </A> respectively and then inserts these tags at appropriate portions in the read HTML, thereby generating an HTML for each user.

The generated HTML is transmitted to the terminal

15 apparatus 2, or to the terminal apparatus 21 through the computer 3 (step S93). With this step, at the terminal apparatus 2 or 21, an HTML shown in FIG. 7 is displayed on the browser (step S94). At the terminal apparatus 2, the hyperlink is displayed without taking the limitation information into account since access is made from

20 inside the university, while at the terminal apparatus 21, no predetermined hyperlink is displayed taking the limitation information into account since access is made from outside the university. Although the above embodiment has been described using an HTML for an example of a language in which home page

25 contents are prepared, the invention is not limited thereto; for

example, any other structured language or markup language may be used.

Embodiment 2.

5   FIG. 10 is a block diagram for showing a configuration of the central apparatus according to Embodiment 2.   The computer program for executing the central apparatus 1 according to Embodiment 1 may be provided as pre-installed in the central apparatus 1 as described in Embodiment 2 or provided in a portable

10   computer memory product such as a CD-ROM or MO. Furthermore, the computer program may be provided as propagated in a carrier wave through the line.   The following will describe the contents specifically.

In the storage unit 15 of the central apparatus 1 shown in

15   FIG. 1 is installed a computer memory product 1a (CD-ROM, MO, DVD-ROM or the like) which records programs for accepting the browsable information etc., registering the information, receiving the identification information, extracting the headline information and the storage location information, generating documents, and

20   transmitting the documents.   Those programs are loaded in the RAM 12 of the central apparatus 1 and executed.   This permits the system to function as the above-mentioned central apparatus 1 of the invention.

Since Embodiment 2 of the invention has such a

25   configuration and has almost the same components and actions as

those of Embodiment 1, the same or similar elements are indicated by the same reference numbers and their detailed explanation is omitted.

As this invention may be embodied in several forms

5 without departing from the spirit of essential characteristics thereof, present embodiments are therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within metes and bounds of the claims, or equivalence of such

10 metes and bounds thereof are therefore intended to be embraced by the claims.